

SECTION D1000
CONVEYING SYSTEMS

06/02

PART 1 - GENERAL

1.0 Y2K COMPLIANCE

Provide Y2K compliant computer controlled facility components (CCFC) for systems specified in this section.

1.1 SYSTEM DESCRIPTION

Provide [hydraulic][electric] [and] [passenger][freight] elevators.

1.2 SYSTEMS REQUIREMENTS

The Design-Build Contractor's Architect/Engineer of Record shall demonstrate the design assembly and arrangement of elevator, accessories, and supporting systems. Show location of machinery and controls in machine room. Provide details for materials and equipment, including but not limited to operating and signal fixtures, doors, door and car frames, car enclosure, controllers, motors, guide rails and brackets, layout of hoistway in plan and elevation, and other layout information and clearance dimensions. Submit complete wiring diagrams and sequence of operations, which show electrical connections and functions of elevator systems for the machine room, hall and the hoistway.

1.4 CRITERIA

The design shall be in accordance with the "SWDIV Conveying Systems Technical Guide", which may be viewed at the following Internet Web site:

[SWDIV Conveying Systems Technical Guide](#)

1.5 QUALITY ASSURANCE

Provide pre-engineered elevator system by manufacturer regularly engaged in the manufacture of elevator systems. Manufacturer shall either install elevator system or shall provide letter of endorsement certifying that installer is acceptable to manufacturer. Installer is required to be regularly engaged in installation and maintenance of elevator systems.

1.6 CERTIFIED ELEVATOR INSPECTOR'S QUALIFICATION

[After completing elevator system installation, notify Contracting Officer that elevator system is ready for final inspection and acceptance test. Contracting Officer will obtain services of Naval Facilities Engineering Command certified elevator inspector. Elevator inspector shall be contacted 90 days prior to elevator inspection and acceptance test.]

[Obtain services of a certified elevator inspector to inspect and witness performance testing of elevator. The inspector shall meet qualification

requirements of ASME/ANSI QEI-1 and be certified by an organization accredited by ASME in accordance with ASME/ANSI QEI-1.]

All systems shall be operated to demonstrate compliance with contract requirements. Return trips to witness repeat acceptance test due to failure of previous tests will be at the contractor's expense for time and travel.

1.7 NEW INSTALLATION SERVICE

Provide routine warranty service in accord with manufacturer's warranty requirements, for period of [12] [_____] months after date of acceptance by Contracting Officer. Perform work during regular working hours. Include 24-hour emergency service, with 1-hour response time, during this period without additional cost to Government. Include adjustments, greasing, oiling, and cleaning. Provide routine inspection and tests of elevators in accordance with ASME A17.1 (Sections 1004 and 1005) and ASME/ANSI [A17.2.1][A17.2.2]. Provide supplies and parts to keep elevator system in operation. Perform service only by factory-trained personnel.

1.7.1 Maintenance and Diagnostic Tools

Provide all special tools and software necessary to service and maintain each elevator; deliver at time of final acceptance. Provide one of each tool per group of elevators.

1.7.2 Keys for Elevator Key Switches

For each group of elevators, provide a minimum of twelve keys per unique cylinder used on all key switches for single elevator. If more than one elevator, additional keys are not required unless there are additional unique cylinders. Keys shall be provided with brass or fiberglass tags marked 'PROPERTY OF THE U. S. GOVERNMENT' on one side with function of key or approved code number on other side.

1.8 MAINTENANCE

1.8.1 Maintenance and Repair Action Plan

Provide plan of action by the Elevator Installation Contractor to provide emergency and routine maintenance in accordance with paragraph entitled "New Installation Service". In addition to data package "SD-10, Operation and Maintenance Data", provide a telephone number list, personnel contacts, and all tools to be provided to the Contracting Officer.

PART 2 - SYSTEM COMPONENTS

2.1 ELEVATORS (D010)

Provide elevator that complies with ASME A17.1 and ASME [A17.2.1] [A17.2.2] in its entirety, and additional requirements specified herein.

2.1.4 Passenger Elevators

The contractor is to obtain the services of an elevator consultant to perform a traffic analysis and also conduct interviews with the user to determine the following:

1. Typical number of personnel & type of freight
2. Rated load
3. Rated speed
4. Travel length
5. Number of stops
6. Number of Hoistway Openings
7. Car platform, car inside, and car door opening dimensions
8. Car Door Types

2.1.4.1 Cab Enclosures and Door Finishes

Provide finishes as listed below:

- a. Floor; [carpet][vinyl composition tile][vinyl sheet tile][____].
- b. Walls; [prefinished steel panels][laminated plastic][stainless steel][____].

Wall trim; [prefinished steel][stainless steel][____].
Accessories; [hand rails][____].
- c. Interior face of door(s); [prefinished steel panels][stainless steel][____].
- d. Ceilings; [supported][prefinished steel panels][anodized aluminum][eggcrate][____].

Ceiling frame; [prefinished steel][stainless steel][anodized aluminum][____].
- e. Hoistway Doors and Frame Finishes

Provide finishes on exterior of hoistway as follows:

- (1) Frame; [prefinished steel][stainless steel][____].
- (2) Exterior face of door; [prefinished steel][stainless steel][____].

2.1.5 Freight Elevators

The contractor is to provide a traffic analysis and also conduct interviews with the user to determine the following:

1. Typical freight
2. Rated load
3. Rated speed

4. Travel length
5. Number of stops
6. Number of hoistway Openings
7. Car platform, car inside, and hoistway door opening dimensions
8. Hoistway Door Types
9. Car gate type
10. Loading type -Class A, B, C

2.1.5.1 Cab Enclosures and Door Frame Finishes

Provide finishes as listed below:

- a. Floor; [mill finish steel diamond plate][painted steel diamond plate][aluminum diamond plate][tongue and groove hardwood][_____].
- b. Walls; [prefinished steel panels][stainless steel][_____]. Wall trim; [prefinished steel][stainless steel][_____]. Accessories; [handrails][_____].
- c. Interior face of doors; [prefinished steel][stainless steel][_____].
- d. Ceiling; [prefinished steel panels][stainless steel][anodized aluminum][_____].
- e. Hoistway Doors and Frame Finishes

Provide finishes on exterior of hoistway as follows:

- (1) Frame; [prefinished steel][stainless steel][_____].
- (2) Exterior face of door; [prefinished steel][stainless steel][_____].

2.2 SPECIAL OPERATION AND CONTROL

Provide all special operations and control systems in accordance with ASME A17.1, including Firefighter's Service, Smoke Detectors, Fire Sprinklers and Independent Service. Provide special operation key switches with removable cores.

2.3 FIRE EXTINGUISHER

Provide a fire extinguisher inside the machine room, on the strike side of the machine room door.

2.4 ELEVATOR DRIVE SYSTEM

Provide [hydraulically-operated][electric [[worm] geared] [or] [gearless] traction, direct-drive machines.

2.5 CONTROL EQUIPMENT

2.5.1 [Motor Controller (Hydraulic Elevator)

NFPA 70 and ASME A17.1, Section 306. Provide elevator motor controller of magnetic reduced-voltage resistance or wye-delta start with overload relays in each line and reverse phase relay. Provide controls for [sequential] starting, stopping, and speed of elevator and to give specified operation. Enclose control equipment in factory-primed and baked-enamel coated sheet-metal cabinets with removable or hinged doors and ventilation louvers.]

2.5.2 [Motor Controller (Electric Elevator)

ASME A17.1, Section 210. Provide variable voltage with silicon controlled rectifier (SCR), or variable-frequency alternating current (ac) drive control. Enclose control equipment in factory-primed and baked-enamel coated sheet-metal cabinets with removable or hinged doors with ventilation louvers.

2.5.2.1 SCR Control or Variable Voltage Variable Frequency (VVVF) AC Control

Provide individual isolation transformers and individual choke reactors for each individual hoist motor. Provide filtering to maintain harmonic distortion below IEEE standards as measured at the elevator machine room disconnect.]

2.5.3 Logic Control

Provide solid-state microprocessor controller to enable programmable control of call allocation, logic functions, door control, speed sensing and car position. Provide a method of reprogramming adjustable parameters of computerized controls. Store all programming in non-volatile memory. The microprocessor control system is acceptable only if hardware and software required to maintain and utilize microprocessor is provided and training is provided to Government Personnel by the equipment manufacturer and supplier.

2.5.3.1 Repair Requirements

For the repair of microprocessor control system, provide maintenance tools, supporting computer software, and software documentation required for complete maintenance of elevator system including diagnostics and adjustments. Tools may be hand held or built into control system. Provide tools that do not require recharging to maintain their memory or authorization for use. Do not use software that requires periodic reprogramming, or reauthorization. Programs shall be stored in non-volatile memory. Tools and software may be factory programmed to operate only with this project's identification serial number.

2.5.4 Automatic Operation

Using the results of the traffic analysis, provide Single Two-Stop Automatic Operation, Selective Collective Automatic Operation, Duplex Selective Collective Automatic Operations, or Group Automatic Operation.

2.5.5 Self-Leveling and Anti-Creep Device

ASME A17.1, Rule 306.3. Provide [each] elevator with two-way, automatic self-leveling device that brings car floor to within 6 mm (1/4 inch) of level with floor landing regardless of load, position of hoistway door, or direction of travel.

2.6 PROVISION FOR HANDICAPPED

ATBCB ADA TITLE III, Sections 4.10 for Elevators, 4.30 for Signage, and 4.31 for Telephones.

[2.7 PROVISIONS FOR EARTHQUAKE PROTECTION

Comply with all ASME A17.1, Part XXIV and requirements of TI 809-04, SEISMIC DESIGN FOR BUILDINGS.]

[2.8 EMERGENCY POWER OPERATION

Upon outage of normal power and initiation of emergency power, provide circuitry and wiring to operate elevator [,telephone] [and] [intercom] [and] to accomplish operation sequences. [In multiple elevator system, one elevator travels automatically to main floor, opens doors, and shuts down. Thereafter, each other elevator in group one at a time returns automatically to main floor. After all cars have returned to main floor, automatically provide one [passenger] [freight] car in regular service.] [For single elevator system, elevator travels automatically to main floor, opens doors, and automatically places itself in regular service.] For emergency power, operation, provide sign reading "EMERGENCY POWER" flashing in each car station. [At same time, provide operable Firefighters' Service.]

2.9 INSTALLATION

Install Elevator in accordance with manufacture's instructions, ASME A17.1, ATBCB ADA TITLE III, and NFPA 70. Do not allow abrupt bending of traveling cables. Do not cut or alter Structural Members. Restore any damaged or defaced work to original condition. Include recesses, cutouts, slots, holes, patching, grouting, and refinishing to accommodate elevator installation. Use core drilling to drill all new holes in concrete. Finish work to be straight, level, and plumb. During installation, protect machinery and equipment from dirt, water, or mechanical damage. At completion, clean all work, and spot paint.

2.10 FIELD QUALITY CONTROL

Contractor shall perform all required tests and demonstrate proper operation of each elevator system and prove that each system complies with contract requirements and ASME A17.1, Section 01006, "Acceptance Inspection and Tests of Passenger and Freight Hydraulic Elevators", and the applicable requirements of Part XI, "Engineering and Type Tests". Inspection procedures in ASME/ANSI [A17.2.1] [A17.2.2] form a part of this inspection and acceptance testing. All testing and inspections shall be conducted in the presence of the elevator inspector. Demonstrate the proper operation of all equipment at various date settings, selected by the elevator inspector, ranging from the date of contract award through 1 January 2099.

Inspector shall complete, sign and post form NAVFACENGCOM 9-11014/33 (Rev. 7-88), Elevator Inspection Certificate, after successful completion of inspection and testing.

2.11 TESTING MATERIALS AND INSTRUMENTS

Furnish testing materials and instruments required for final inspection. Include calibrated test weights, tachometer, 600-volt megohm meter, volt meter and ammeter, three Celsius calibrated thermometers, door pressure gage, spirit level, stop watch, dynamometer, and 30 meter (100 foot) tape measure.

2.12 FIELD TESTS

2.12.1 Endurance Tests

Test each elevator for a period of one-hour continuous run, with specified rated load in car. Restart the one-hour test period from beginning, following any shutdown or failure. During test run, stop car at each floor in both directions of travel for standing period of 10 seconds per floor. The requirements for Rated Speed, Leveling, Temperature Rise and Motor Amperes Test specified herein are to be met throughout the duration of the Endurance Test.

2.12.2 Speed Tests

Determine actual speed of each elevator in both directions of travel with rated load and with no load in elevator car. Make Speed tests before and immediately after Endurance test. Determine speed by tachometer reading, excluding accelerating and slow-down zones per ASME/ANSI A17.2.1. Minimum acceptable elevator speed is the Rated speed specified. Maximum acceptable elevator speed is 110 percent of Rated speed.

2.12.3 Leveling Tests

Test elevator car leveling devices for landing accuracy of plus or minus 6 mm (1/4 inch) at each floor with no load in car, symmetrical load in car, and with rated load in car in both directions of travel. Determine accuracy of floor landing both before and immediately after endurance tests. [For Class C2 landing, freight elevators shall comply with ASME A17.1, Rules 207.2b (3) (a), (b) and (c). The maximum load on car platform during loading or unloading shall not exceed 150 percent of rated load.]

2.12.4 Insulation Resistance Tests

Perform tests to ensure elevator wiring systems are free from short circuits and grounds. Minimum acceptable insulation resistance for electrical conductors is one megohm between each conductor and ground and between each conductor and other conductors. Prior to megohm meter test, make provisions to prevent damage to electronic devices.

2.12.5 Temperature Rise Tests

Determine temperature rise of elevator hoisting motor, motor-generator, exciter, and booster during full-load test run for one hour minimum. Under these conditions, maximum acceptable temperature rise shall not exceed

acceptable temperature rise indicated on manufacturer's data plate. Start test only when equipment is within 5 degrees C of ambient temperature.

2.12.6 Balance Tests

Perform electrical and mechanical balance tests of car and counterweight.

2.12.7 Motor Ampere Tests

Measure and record motor amperage when motor is running and elevator is lifting at rated load and speed. Measure and record motor amperage at beginning and end of Endurance test.

2.13 MAINTENANCE SERVICE TRAINING

Provide qualified representative of elevator manufacturer to instruct Government personnel in care, adjustment, and maintenance of elevator equipment for a period of not less than 5 working days immediately following acceptance of elevator system.

PART 3

Not Used.

--END OF SECTION--